ENERGY EFFICIENCY AND CLIMATE POLICY

Testimony of
Philip Giudice
Commissioner, Department of Energy Resources
Commonwealth of Massachusetts
before the
Subcommittee on Energy and Environment, Committee on Energy and Commerce

Tuesday, February 24th, 2009

I. Introduction

Thank you, Chairman Markey and members of the Committee, for the opportunity to testify on behalf of the Commonwealth of Massachusetts. I know that Governor Patrick, Secretary Bowles, and residents and businesses across the Commonwealth very much appreciate your strong leadership and accomplishment in addressing both our energy challenges and global climate change. In particular, we are proud to support two bills that you have filed – the Investing in Climate Action and Protection Act (H.R. 6186) and the Energy Efficiency Resource Standard (H.R. 889) – and we look forward to working with you, the Committee, the Massachusetts delegation, Congress and the Administration to advance bold federal energy and climate policies this session.

While the energy and climate challenges we face appear daunting, we have many tools and experiences which when fully deployed will enable substantial progress. The time has come to take bold action. We need policies which will unleash the fullest potential of our country to mobilize solutions for our energy and climate challenges.

If you take away only one thing from my comments today, it is this: energy efficiency is a proven, reliable and extremely valuable tool for building a greener energy future. It is also a tool that we can quickly deploy to reinvest in our homes and businesses – starting today – in ways that will begin to turn around our economy, and in the longer term will put the United States at the hub of a 21st century global clean energy economy. As Governor Patrick has said about Massachusetts, if we get clean energy right, the world will be our customer. And in the context

of your consideration of a federal carbon cap-and-trade program, it is also clear, based on our long experience in Massachusetts with efficiency programs and our short but valuable experience with carbon caps, that energy efficiency is the best cost-containment tool we have.

I know that you are well acquainted with our existing efficiency programs and policies in Massachusetts, but I want to take this opportunity to share for the record some of our lessons and provide a glimpse of the transformation that is underway.

Massachusetts' historically high cost of energy and our innovative people have combined to establish us as a leader in efficiency. Our energy productivity is one of the highest in the nation, with our economy generating $200 of gross state product for every million BTU consumed (US GDP is $116 per million BTU consumed). Efficiency and economic growth can and do go hand in hand in Massachusetts.

Massachusetts' long and distinguished record investing in energy efficiency is delivering great results. We have continuously invested in efficiency for over three decades. For instance, we collect and invest ¼ of a penny from every kWh distributed by our regulated utilities in wide ranging and far reaching energy efficiency programs. This totals about $125 million per year for our electric efficiency programs, which is about $20 per capita (for comparison purposes the US total spend is about $2.5 billion, or about $8.39 per capita). These programs result in saving energy for about 3.6 cents per kWh saved, and contribute to an overall savings of 8% of our kWh consumed. This is a great deal, especially when the annual cost of power from generation in the wholesale market averages 8 cents per kWh in New England.

We are at this very moment in the process of transforming our efficiency infrastructure and our economy in Massachusetts to create a greener energy future for the Commonwealth. This effort is producing remarkable results. This transformation began with Governor Patrick and our legislature's leadership to fundamentally change the equation for investing in efficiency. Instead of investing a prescribed amount and getting all the efficiency we could for a certain sum of money, we are now required to invest in all efficiency that is less expensive than supply sources. With efficiency costing 3.6 cents per kWh and supply costing 8 cents per kWh, we expect to see a likely doubling, tripling, or more in our efficiency spending. Our transformation is being accelerated by investing revenues from our participation in the Regional Greenhouse Gas Initiative, and will be further turbocharged by the recently passed federal stimulus.

This dramatic reorientation of our energy markets – the requirement that electric and gas utilities treat energy efficiency as a resource that that competes with supply from power plants and gas pipelines on the basis of price – has led our utilities to propose 30, 50, even 100 percent increases in their annual energy efficiency investment plans. This will mean more energy auditors working to identify energy saving opportunities in thousands of homes and businesses across the state; more contractors blowing insulation into our old housing stock; and more plumbers pulling boilers from the 1950s out of basements and installing super-efficient modern heating systems that will cut energy use by a third. Even our oil heat industry – not currently regulated – has proposed legislation this session to establish energy efficiency programs for the approximately 40% of homes in Massachusetts that heat with oil. In short, all this will mean vast savings for consumers and businesses from reduced energy use.

Let me give you some examples of what is happening in Massachusetts as a result of this activity. A homeowner named Alex Cheimets is in the final stages of a major renovation. This started – as these things often do – with a small water leak, and ended with a bold project that is expected to reduce his energy use by half or more, through thorough air sealing of the building envelope and adding four to six inches of foam insulation to the sides and roof of his house, as well as installing an air to air heat exchanger and monitoring equipment. His is a typical Massachusetts home – an eighty-year-old two-family house which leaked badly but now will be a model of what is possible.

Let me also tell you about the near zero energy homes available on Coppersmith Way in Townsend, MA. They are being built by Transformations, Inc., a local builder who specializes in super energy-efficient home construction. During the last two years, Transformations has built seven new homes that use less than half the energy of conventional homes, and have solar panels that generate a significant portion of the electricity they do use. And this is only one example of a growing zero net energy building industry – I can point you to at least half a dozen other spots where we are seeing people build or renovate buildings in ways that get us on the path to meeting our carbon targets.

Companies as diverse as EBSCO Publishing in Ipswich and Boston Sand and Gravel, visible from the MBTA Orange Line and I-93 in Boston, have installed significant solar photovoltaic arrays to generate clean electricity on site.

All kinds of organizations are taking action to become energy leaders. As you well know, Mr. Chairman, Massachusetts is proud of its professional sports teams. In addition to winning six championship banners in the last seven years, our local sports teams are dominating the playing field in clean energy as well. The Red Sox use solar thermal energy to heat the water used at Fenway Park. The New England Patriots power the lights at Gillette Stadium with renewable energy, and stadium managers, through paying close attention to site energy use, have cut electricity and natural gas use – and their carbon footprint – by 25% over the last four years.

Efficiency Pays

Massachusetts has a history of success delivering energy efficiency to residential, commercial and industrial customers. Through programs established by both state mandates and the cooperation of the state, utilities, and various stakeholders beginning in the 1980s, we have long had residential energy auditors, insulation contractors, and plumbers making our aging housing stock more energy efficient. And for decades we have had engineers examining our commercial office buildings, city halls, hospitals, and industrial facilities replacing outdated lighting, motors, refrigeration equipment, and more.

The measures covered by the programs have varied over time, but include steps as simple as caulking and weather-stripping leaky doors and windows, and as complex and expensive as switching out a 50-year-old boiler for a brand new energy-efficient one. (In some places we are now piloting super-efficient micro-combined heat and power cogeneration systems that can provide both electricity and heat.) Often, commercial and industrial customers will get a

comprehensive energy audit from experienced engineers that will provide a list of more than a dozen energy efficiency measures that will reduce energy expenses, cut pollution, and improve aging capital.

These programs have been highly cost effective, delivering great benefits to the Commonwealth. These include energy bill savings through direct reductions in energy use by homes and businesses that have made efficiency upgrades. But the benefits go farther than that. Energy efficiency reduces demand for electricity from the regional electricity grid, which means that all these measures significantly reduce pollution from power plants and forestalls the need to build new expensive peaking power plants.

Reducing peak demand by enlisting customer's participation in energy markets has substantial benefits. In Massachusetts almost 15% of our peak demand occurs in just 88 hours per year. With appropriately structured markets, many customers have shown a willingness and ability to reliably reduce their demand for these few hours each year and thereby eliminate the need to build some generation. Through these programs, New England is on its way to meeting 10% of its peak demand with demand-side resources.

Moreover, energy efficiency programs have local economic development effects. Dollars that consumers and business owners don't spend on energy are available to be spent productively in many other ways. Importantly, the dollars spent on these energy efficiency measures are dollars spent improving Massachusetts homes and businesses, through work done by local contractors, with employees from the Commonwealth and surrounding states, rather than sent out of state to pay for coal, oil, or natural gas.

Through delivery of these energy savings to consumers across the state, we are now meeting approximately 8% of our energy needs with Negawatts rather than Megawatts. In fact, we are effectively creating electricity at about 3.6 cents per kWh through efficiency, as compared to 8 cents for the cost of conventional supply.

Making Efficiency Compete With Supply

But we have both the opportunity and the responsibility to do more. On July 2, Governor Deval Patrick signed into law the Green Communities Act, a comprehensive energy reform law developed in close collaboration with our state legislature. The new law dramatically expands energy efficiency's role in the Massachusetts economy, and sets as a goal reduction of energy consumption across the Commonwealth by 10 percent in less than a decade.

Under the new law, the state will make energy efficiency programs compete on price with traditional energy supply. Utility companies (NSTAR, National Grid, Western Mass. Electric, etc.) will be required to purchase all available energy efficiency improvements that cost less than it does to generate power to meet the same energy need, ultimately saving money on consumers' electricity bills. And it will be done not as an add-on to utility bills, but as an integral part of the way utility companies meet their customers' energy needs.

When each electric distribution utility looks at how much electricity it needs to buy from power generators in our competitive wholesale market to meet the demands of its customers, it will be required first to identify all the cost-effective opportunities available to save electricity. That means replacing lighting, air conditioning, and industrial equipment with more efficient models.

Utility companies will offer rebates and other incentives for customers to upgrade lighting, air conditioning, and industrial equipment to more efficient models, whenever those incentives cost less than generating the additional electricity it would take to power their older, less-efficient equipment. Each utility will be required to submit a three-year efficiency investment plan, subject to review by a new Energy Efficiency Advisory Council and approval by the Department of Public Utilities.

Customers who take advantage of the incentives offered by these plans will save money as they reduce how much energy they use and pay for. And all customers will save money from lowering the overall demand for electricity. As a result of the Green Communities Act, we expect to triple or quadruple our energy savings over the next several years.

Let me be clear: it will not be easy to achieve these savings, but it is eminently doable, and it will be far easier than the alternative. Our analysis indicates that the average existing home in Massachusetts uses about 20 - 50% more energy than current codes allow. This is simply because most of our houses were built long ago, without proper weatherization and without modern efficient equipment. We are currently designing programs that will achieve deep energy use reductions in all these older homes. That means lower utility bills, and lower greenhouse gas emissions, along with other pollution. We are also now on a trajectory to adopt aggressive building energy codes that will ensure newly built homes and commercial buildings are much more energy efficient than today's buildings.

One of the keys to our success is the Regional Greenhouse Gas Initiative, or RGGI. This first-in-the-nation cap on carbon pollution has been developed over the last six years by ten northeast states. All large power plants in the northeast are now operating under a carbon cap. Moreover, these states are mostly auctioning the pollution permits, and dedicating much of the revenue to energy efficiency programs that both lower carbon emissions *and* lower the cost of energy. Massachusetts has participated in the first two auctions, generating approximately $28 million dollars, which is at this very moment supporting not only expanded utility efficiency activities but also extra efforts to replace antiquated boilers in the homes of low-income people, and install energy efficiency improvements in schools, city halls, and water treatment plants around the state.

I am happy to share more about our experience in Massachusetts, but let me now turn to questions about federal policy. For your reference I am attaching, as Appendix A, a recent summary of energy and related environmental reforms adopted in Massachusetts.

II. Where We Are and Where We Can Go: Energy Efficiency and Climate

It is clear from our experience in Massachusetts that government-led energy efficiency efforts are needed because of various market failures that prevent us from tapping into all cost-effective energy efficiency measures. In all too many cases, incentives are not aligned for saving energy, despite the fact that saving energy means saving money. Where people who build buildings are not going to pay their operating costs, we miss opportunities to save energy. Where landlords rent to tenants who pay their own utility bills, we miss opportunities to save energy. Where manufacturers are allowed to sell products that waste energy for no productive purpose, we are missing opportunities. In all these cases and more, there is a proper role for government leadership.

At the state level, we currently have a patchwork quilt of activity. A handful of states have long-running and effective programs to help save energy, while other states do little or nothing. Most importantly, none of us are doing nearly enough.

Fortunately, our path forward is relatively clear: aggressive state efficiency programs; strict appliance and equipment standards; and forward-looking building energy codes.

A. Federal Energy Efficiency Resource Standard

We need to get all states moving toward deep energy savings quickly, and a well structured federal Energy Efficiency Resource Standard is an appropriate tool to do so. It will do the most to help states that have yet to develop efficiency programs. If not done properly, however, it could also work against the states that have long been leading the way.

We would argue for following Massachusetts's lead by treating energy efficiency as a resource that competes on a cost basis with other supply options. In Massachusetts we are already seeing exciting results. We would strongly support an Energy Efficiency Resource Standard that moves in this direction. Given that it may be difficult in some places to set up effective efficiency programs in the near term, it makes sense to set resource standards that ramp up quickly over time. Based on our experience, we suggest setting bold aggressive standards.

A federal EERS will also need robust requirements for measurement and verification of energy savings. Massachusetts has built strong measurement and verification (M&V) requirements into our programs. These requirements are crucial for ensuring, and demonstrating to the public, that energy efficiency investments provide the energy savings that are promised. We encourage consideration of a national efficiency M&V and reporting requirement.

We strongly support provisions that ensure energy savings will be delivered to all customers, regardless of their geographic location, and your commitment to treating energy efficiency and renewable energy separately. Energy efficiency, as distinct from renewable energy resources, is available in every state, service territory, home and business across the country, and we should be capturing all of it, for the good of consumers and the environment. Each state's distinct characteristics – climate, economy, age of building stock, etc. – need to be considered in creating effective efficiency programs. In contrast, a national regime of tradeable energy efficiency certificates could undermine effective programs in leading states.

B. Federal and State Appliance Efficiency Standards

A clean energy future is all about making better choices, but government has the opportunity and the responsibility to take stupid choices off the shelves. Manufacturers have simply not cared nearly enough about appliance and equipment energy efficiency. Set top boxes and TVs that consume 100 watts or more power whether they are on or off is an example of this lack of consideration.

As President Obama has noted, appliance and equipment standards can save significant amounts of energy and money, and states need the federal government to act much more quickly and aggressively to adopt product efficiency standards for all products currently in the queue and many others where energy savings are available. In addition, states should have a clear path to adopting standards that are more aggressive than federal standards, where conditions warrant. In our own case, our legislature has mandated the adoption of a furnace efficiency standard applicable for cold states, where differences in furnace efficiency really matter, and we will need a waiver from the existing national-average efficiency standard to finalize it. We hope that Washington will honor our legislature's wishes and enable the Commonwealth and other cold states to adopt furnace standards that make sense for our climate.

C. Building Energy Codes

Finally, we need robust building energy codes to ensure that all new buildings and all major retrofit projects bring buildings up to the most modern energy performance standards. Our current code system is leading to huge amounts of energy waste even in brand new buildings. Massachusetts supports an aggressive regionally tailored national building energy code. The Commonwealth is now on a path to adopt the most recent international energy conservation code (IECC) and automatically update our code whenever the IECC code is updated. But even the international code development process does not guarantee the best result for energy users. We sent a delegation to a recent codes meeting in Minneapolis to support a more aggressive energy code package, and were deeply discouraged by the process and the outcome. Of course, states should be able to adopt more stringent standards, and a national energy code would need to account for regional climate differences, but an aggressive national energy code will address many of the persistent market failures that leave energy saving opportunities on the table.

III. Principles for a Carbon Policy

Finally, I want to state for the record a few of our principles for any federal carbon policy. First, we believe our experience with RGGI shows that auctioning allowances in a carbon cap-and-trade system provides all market participants necessary visibility regarding the cost of carbon, and spurs market innovation. The well monitored and free exchange between buyers and sellers of RGGI allowances has provided all market participants with price clarity. This price clarity can be and is being factored into generators' investment plans, as well as efficiency providers'. All are motivated to find the least cost solutions to meet our carbon goals. Market innovation is being spurred by this new market.

Second, we believe that the best short- and long-term results for consumers will come from allocating as much of the revenue to energy efficiency programs as possible – energy efficiency is the best cost-containment tool we have. We also strongly support allowing states to determine how best to invest auction revenues, with clear requirements to prioritize boosting energy efficiency and addressing increased consumer costs. This would allow states to make decisions based on local conditions and requirements, and to design programs that are consistent and comprehensive for consumers.

IV. Conclusion

I want to conclude by thanking you again, Chairman Markey and members of the committee, for your leadership and for the opportunity to testify today

The time is now to move boldly to create a much greener energy future, one in which we grow our economy substantially by becoming much more productive with the energy we consume.

I strongly believe that energy efficiency is the best tool in the toolbox for tackling our energy and climate challenges, and I fully support your efforts to advance bold federal energy and climate policies this session. Massachusetts stands ready to be your partner in creating our greener energy future.

APPENDIX A: MASSACHUSETTS EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS
2008-09 ACCOMPLISHMENTS

CLEAN ENERGY ECONOMY

- Worked with legislative leaders to pass five landmark pieces of legislation that have made Massachusetts a national leader in clean energy innovation and addressing the challenge of global climate change:
    - Green Communities Act, a comprehensive reform of the state's electricity marketplace that promotes a dramatic expansion in energy efficiency, supports the development of renewable energy resources, creates a new greener state building code, removes barriers to renewable energy installations, stimulates technology innovation and helps consumers reduce electric bills. Also creates a new Green Communities program that encourages and helps municipalities go green through energy efficiency investments and renewable energy development.
    - Clean Energy Biofuels Act, which exempts cellulosic biofuels from the state's gasoline tax (first tax incentive in the nation for next-generation, non-food-based gasoline alternative); sets minimum biofuel content for diesel and home heating fuel (the latter a first-in-the-nation requirement), subject to strict lifecycle greenhouse gas emissions reduction standards; and commits the state to developing a Low Carbon Fuel Standard on a regional basis – 10 Northeast states in RGGI and beyond (Pennsylvania) are working with us to begin this work, after signing Letter of Intent announced January 5, 2009**.**
    - Green Jobs Act, which created a new Clean Energy Technology Center to support R&D, entrepreneurship, and workforce development in an industry of the future. Proposals for Pathways Out of Poverty Grants for training of low- and middle-income individuals for clean energy jobs now being solicited. Expansion of clean energy companies based in Massachusetts this year include Evergreen Solar (700+ manufacturing jobs), Brookfield Power, Beacon Power, and GreatPoint Energy.
    - Global Warming Solutions Act, which combats global climate change by requiring Massachusetts to cap greenhouse gas emissions across the economy by up to a nation-leading 25 percent by 2020, ultimately reducing them by 80 percent by 2050. In addition to cleaning up the environment, the law will stimulate the development of clean energy technologies and jobs. This law builds on Massachusetts's first-in-the-nation requirement of alternatives analysis to reduce greenhouse gas emissions in the state environmental review process.
    - Oceans Act, which requires a first-in-the-nation comprehensive plan to manage development in state waters, balancing natural resource preservation with traditional and new uses. The plan will select appropriate sites for renewable energy development and areas for environmental protection.

Unprecedented public process now well under way, with draft plan due for release this summer.

- Launched Commonwealth Solar, a rebate program that has provided support to more than 400 installations for capacity of over 4 MW in solar power – doubling what was installed statewide at the time Gov. Patrick took office. It has spurred the growth of jobs and companies as well: number of solar installation contractors jumped by a factor of three in one year – from 25 to 75 – plus many more subcontractors. Ramp-up is ahead of initial projections for first year activity, putting the program on a path toward installing 27 MW of solar power in four years, and meeting Gov's goal of 250 MW by 2017.
- Gov. Patrick set goal of 2,000 MW of installed wind power by 2020, up from 6.6 MW currently, citing new mandates that require greater use of renewable energy and sharp reductions in greenhouse gas emissions, and economic opportunity for Mass. to become a hub of wind-energy engineering with one of two DOE-approved Wind Technology Testing Centers in the country, which will be built in Charlestown. Siting Commission created by Green Communities Act will propose ways to siting of wind power developments.
- Took possession of state's first plug-in hybrid vehicle, a retrofitted Toyota Prius capable of 100 MPG. Pilot program will document performance of this next-generation, super-fuel-efficient vehicle technology in state fleet with 20 retrofitted vehicles, and 20 additional plug-in hybrids provided in partnership with private employers to demonstrate commuter benefits of this clean-car technology.
- Convened a Zero Net Energy Buildings Task Force charged with developing guidelines for super-green buildings that produce virtually as much clean energy as they use. Recommendations are to provide specifications for the first state-owned Zero Net Energy building by January 1, 2010; specify an interim standard for state-owned construction that is significantly more stringent than the current Mass. LEED Plus benchmark; and, for private development, point the way toward broad marketability of Zero Net Energy residential and commercial buildings by 2020, and universal adoption of Zero Net Energy buildings for new construction by 2030.
- Began process to establish a "stretch" building code for energy efficiency, which would be available as a local option for municipalities that want to set building standards 20 to 30 percent higher than the statewide building code in energy efficiency.
- Set a goal of making all new malls and "big box" retail stores energy efficient and powered in part by solar energy by 2010, and began dialogue with development community to identify the technical assistance, financing support, and regulatory standards necessary to achieve this goal.
- Issued the Governor's Clean Energy Challenge, a challenge to businesses to reduce their greenhouse gas emissions by 10 percent over the next three years, an initiative developed by the New England Clean Energy Council and the Massachusetts High Technology Council in cooperation with the state's electric and natural gas utilities, to offer recognition to participants who meet or exceed the 10 percent reduction target. Similar Challenge will be issued to municipalities through the Green Communities Program, and ultimately to residential consumers as well.

- With Massachusetts leading, Regional Greenhouse Gas Initiative (RGGI) got under way with first two auctions of greenhouse gas emissions allowances in the country, generating $28.1 million in new revenues that have been put to work funding energy efficiency improvements for households and municipalities, capping greenhouse gas emissions from large electric power plants across the Northeast, and laying the groundwork for a federal cap-and-trade system.
- Announced that, starting with the 2010 model year, all new cars offered for sale in Mass. will carry a label rating their greenhouse gas emissions, as well as smog-forming emissions.
- Launched MassCleanDiesel, the nation's first fully funded statewide program to reduce air pollution from all school buses. The new program will equip up to 5,500 school buses – virtually all the large diesel-powered school buses (those that weigh more than 10,000 pounds, and carry more than 10 students at a time) serving public schools – with pollution-reducing equipment.